

WHAT IS CLAIMED IS:

1. A band pass filter for passing a frequency band having a central wavelength which is corresponding to a center frequency, comprising:

5 a substrate;
 input/output portions formed on the substrate;
 a plurality of resonators provided between the input/output portions; and

 transmission line paths, each having coupling
10 portions at both ends, the coupling portion being faced to one of the resonators with a gap, each of the transmission line paths having a length which is $(1+2m)/4$ -fold (m : natural number) of the central wavelength, and each of the coupling portion having a
15 length of a $1/4$ of the central wavelength.

2. The band pass filter according to claim 1, wherein the resonator has a length which is $n/2$ -fold (n : natural number) of the central wavelength.

3. The band pass filter according to claim 1,
20 wherein at least one of the resonators is formed by a superconductor.

4. The band pass filter according to claim 1, wherein the resonator includes linear portions which are continuously connected, each of the linear portions
25 having an unit of a $1/4$ of the central wavelength, and the linear portions arranged at the both ends of the resonator corresponds to the coupling portions.

5. The band pass filter according to claim 1,
wherein the transmission line path includes linear
portions which are continuously connected.

6. The band pass filter according to claim 1,
5 wherein one of the resonators is coupled with the three
transmission line paths.

7. The band pass filter according to claim 1,
wherein the substrate consists of MgO.

8. The band pas filter according to claim 1,
10 wherein the resonator is linear.

9. The band pass filter according to claim 1,
wherein the transmission line path is linear.

10. The band pass filter according to claim 1,
wherein the resonator and the transmission line path
15 are arranged alternately.

11. The band pas filter according to claim 3,
wherein the superconductor is Y-based copper oxide
high-temperature superconducting thin film.

12. The band pass filter according to claim 3,
20 wherein the resonator consists of a microstrip line
path.

13. The band pas filter according to claim 3,
wherein the transmission line path consists of a
microstrip line.

14. The band pass filter according to claim 4,
25 wherein the two adjacent linear portions make a right
angle.

15. The band pass filter according to claim 5,
wherein the two adjacent linear portions make a right
angle.

16. The band pass filter according to claim 1,
5 wherein the resonator and the transmission line path
include both types of a linear and a bend.

17. The band pass filter according to claim 1,
wherein different lengths of the transmission line
paths are included.